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Press release

Volvo Technology Award for more efficient excavator hydraulics

Four Korean engineers have received the 2011 Volvo Technology Award for their work in refining the hydraulic system used in Volvo Construction Equipment's excavators. The resultant improvement in system efficiency is yielding fuel savings of up to 15 percent. The award was presented by Volvo Group CEO Leif Johansson at the Group's AGM on April 6.

The 2011 Volvo Technology Award recognises what is often termed 'frugal engineering'. Applying intelligent solutions, the award-winning team of engineers at the Volvo Construction Equipment (Volvo CE) production plant in Changwon, Korea made refinements to the excavator hydraulics that yielded an improvement of 11 to 15 percent in fuel efficiency, depending on the application. As a result, Volvo CE's excavators are now so efficient that they use about 10 percent less fuel than the best comparable machines of their competitors. The team adapted the unique electronic system used to control the machine's on-board hydraulic pump to make their improvements.

Compared with new fuel-saving technologies, such as hybrid solutions, the award-winning design has much less impact on product cost.

The Korean team developed one algorithm for improving the flow in the hydraulic circuits and limiting it during the excavator's acceleration phase, and another for reducing the flow at high loads. The hydraulic system was also optimised to limit fluid friction in the hydraulic lines to the absolute minimum. A third algorithm was developed for calculating the fluid flow requirement under different working conditions.

To date, the design has been awarded one patent, while a further five patent applications have been filed in Korea, the USA and the EU.

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“As an engineer by profession, i always find it satisfying to see how skilled ‘everyday’ engineering can yield such fantastic results,” commented Volvo Group CEO Leif Johansson at the award ceremony. “In this case, intelligent ideas were used to refine the conventional hydraulic system and achieve a fuel saving of almost 15 percent. Not only does this benefit the customer’s pocket; it also helps to reduce environmental impact.”

The four award-winners are:

Heagyoon Joung and Sanghee Lee, both of Volvo CE Technology Platform, Hydraulic Systems, and *Dongsoo Kim and Hungju Shin*, both of Volvo CE Technology Platform, Electric & Electronic Systems.

Instituted in 1988, the Volvo Technology Award is being presented this year for the 24th time. Its purpose is to recognise outstanding technological achievements by Volvo Group personnel, which help to raise the Group’s technological image and promote initiatives that will advance its technological expertise in the years ahead.

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Reporters who want more information, please contact Mårten Wikforss, +46 31 66 11 27 or +46 705 59 11 49.

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